MICROSCAN

HE40T Quickstart Guide

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Contents

PREFACE Welcome **vii**

Purpose of This Manual **vii**
Laser Safety **vii**
Manual Conventions **viii**

CHAPTER 1 Getting Started **1**

Attaching the H2 Cabled Handle **2**
Attaching the BH1/BH2 Battery Handle **4**
HE40T Wireless **6**
- Connecting With A QuickConnect Code 6
- HE40T Wireless Setup 6
- Radio Range and Transferring Data 7

HE40T Cables **8**
- USB Cable Connection 9
- PS2 Cable Connection 10
- RS-232 Cable Connection 11
- USB Cable Settings 11
- PS2 Cable Settings 11
- RS-232 Cable Settings 12
- Baud Rates 12
- Save Settings 13

Targeting and Reading Techniques **13**
- Reading Symbols with the HE40T 14
- Programming Codes 15
  - Symbology Settings 15
- DoD UID Settings 17
- Batch Mode 18
- Auto Transfer Buffer Memory 18
- Trigger Programming 20
  - Left Trigger 20
  - Right Trigger 20
  - Handle Trigger 21
- Turbo Dot Peen Mode 21

Miscellaneous Programming Codes **22**
Prefix Settings 22
Suffix Settings 23
Volume and Vibration Settings 25
Minimum Requirements **25**

PREFACE

Welcome

Purpose of This Manual

The purpose of the manual is to get you up and running quickly and confidently with your HE40T reader.

Laser Safety

Caution
Laser in the HE40T

LASER RADIATION - AVOID LONG TERM VIEWING OF DIRECT LASER RADIATION - LASER CLASS 2M

Wavelength 630 nm - Maximum radiant power: < 1mW

EN 60825-1:2003

Note: LED Lighting

Light Emitting Diode Class 1 according to EN 60825-1:2003

Manual Conventions

The following typographical conventions are used throughout this manual:

- Items emphasizing important information are **bolded**.
- Menu selections, menu items and entries in screen images are indicated as: Operation, Configure, etc.

CHAPTER 1 Getting Started

The HE40T is a revolutionary new low cost bar code reader that employs Microscan's industry leading Direct Part Mark (DPM) reading technology. Developed to be the first universal reader, no other single device performs as many functions. With a cost of ownership far less than comparable systems, the HE40T incorporates a unique dual path optical system, a 1.3 million pixel CMOS sensor, and a 400 MHz processor. This combination has created a reading system that supports:

- DPM applications
- Department of Defense Unique Identification (DoD UID)
- High density matrix codes and larger low density linear barcodes
- Superior working range
- High-speed omni-directional decoding
- Cordless and cabled interfaces
- Unsurpassed data rates

The HE40T features a variety of accessories including ruggedized handles. For more information or for technical support, see the Preface of the HE40T User Manual.

Attaching the H2 Cabled Handle

The HE40T uses the battery compartment to “snap to” the handle. Figure 1–1 shows the H2 handle with flexible connector. Figure 1–2 shows the battery blank.

FIGURE 1–1. H2 Handle with Flexible Connector

FIGURE 1–2. H2 Handle with Battery Blank

To attach the handle to the reader:

1. Push the 8-pin DIN connector at the end of the reader into the flexible connector at the end of the handle, as shown in Figure 1–3.

FIGURE 1–3. Attaching the H2 Handle

2. Insert the tab on the back of the handle into the reader (Figure 1–3).

3. Snap the reader onto the handle, matching the battery compartment to the battery connectors, visible inside the handle, as shown in Figure 1–3.

The HE40T can be secured further with threaded screws on the under side of the handle, and on the end of the flexible connector, as shown in Figure 1–4.

FIGURE 1–4. Location of Threaded Screws

Attaching the BH1/BH2 Battery Handle

The HE40T uses the battery compartment to “snap to” the handle. The BH1/BH2 handle is shown in Figure 1–5. The handle with battery is shown in Figure 1–6.

FIGURE 1–5. BH1/BH2 Handle

FIGURE 1–6. BH1/BH2 Handle with Battery

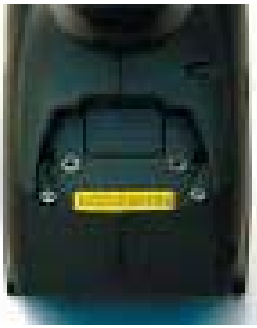
To attach the handle to the reader:

1. Insert the tab on the back of the handle into the reader, as shown in Figure 1–7.
2. Snap the reader onto the handle, matching the battery compartment to the battery connectors, visible inside the handle, as shown in Figure 1–7.

FIGURE 1–7. Attaching the BH1/BH2 Handle

The HE40T can be secured further with threaded screws on the under side of the handle, as shown in Figure 1–8.

FIGURE 1–8. Location of Threaded Screws



HE40T Wireless

This HE40T features a Bluetooth® wireless radio. The radio allows for point to point wireless communication with other Bluetooth devices that support serial port protocol (SPP). The following information will give you general instructions on connecting your HE40T to a desktop or laptop computer with a Bluetooth radio.

Connecting With A QuickConnect Code

If you purchased a CodeXML Bluetooth Modem or a Belkin® Bluetooth adapter from Microscan or from an authorized distributor, a QuickConnect code was included, as shown in Figure 1–9.

FIGURE 1–9. Sample QuickConnect Code

Sample Code

The QuickConnect code has the information of the Bluetooth address (often a reference to go to the BD_ADDR) of that device. You can usually find the 12-character Bluetooth address somewhere on the device near the device's serial number (Figure 1–10). This code will link your HE40T directly to the desired Bluetooth device.

FIGURE 1–10. Locating the Bluetooth Address

HE40T Wireless Setup

Note: While installing the Bluetooth Configuration Manager software that was included with your Bluetooth adapter, make sure to note the Virtual COM Port number the software assigned for the adapter (e.g., COM 10). This is the COM Port your HE40T will connect through.

To connect your reader:

1. Scan the Reset to RF Factory Defaults code shown in Figure 1–11.

FIGURE 1–11. Reset to RF Factory Defaults Code

M684_01

Reset to RF Factory Defaults

00BEB021A035

QuickConnect (Sample) Scan the QuickConnect code that matches the Bluetooth address of your device

2. Scan the QuickConnect code you received.

3. The HE40T will automatically connect. By default, the HE40T will beep once after it connects and beep three times in a row if it did not connect.

4. Scan the Save Settings code (Figure 1–12) to the right if you want to save the wireless connection settings to the HE40T so that the HE40T will automatically try to connect wirelessly the next time it is powered on.

FIGURE 1–12. Save Settings Code

M188_02

Save Settings

Radio Range and Transferring Data

The HE40T radio is a Class 1 device. If connected to another Class 1 device, the unit has roughly a 300 foot line of sight operating range. If connecting to a Class 2 or Class 3 device, the operating range may drop to match the lower range. Once a unit is connected, the application software on the host must be open to receive data.

When the HE40T detects the radio is out of range, the HE40T will store data on the reader's non-volatile memory.

For more information about setting up and using the HE40T with a wireless Bluetooth configuration, consult the HE40T User Manual.

HE40T Cables

The HE40T is available with USB, RS-232 and PS2 cables. All of the cables are connected to the HE40T with a 8-pin DIN connector. Different cables may be required for different hosts.

- HE40T with H2 Cabled Handle — The 8-pin DIN connection is at the bottom of the handle. Firmly push the 8-pin connector into the bottom of the handle. The cable has a locking mechanism that will firmly hold the cable in place (Figure 1–13). To detach the cable from the reader, you must pinch the plastic on the 8-pin DIN (Figure 1–13) and pull back to disengage the connector.

FIGURE 1–13. Handle with Cable Attached

Install the optional cable clip to further secure the cable to the handle with two threaded screws, as shown in Figure 1–14.

FIGURE 1–14. Securing Cable Clip with Two Threaded Screws

- HE40T with BH1/BH2 Battery Handle — Firmly push the 8-pin connector into the back end of the reader, as shown in Figure 1–15. The cable has a locking mechanism that will firmly hold the cable in place. To detach the cable from the reader, you must pinch the plastic on the 8-pin DIN and pull back to disengage the connector.

FIGURE 1–15. Handle with Cable Attached

USB Cable Connection

1. Attach the USB cable to the HE40T.
2. Connect the USB cable to the host in any available USB host port, as shown in Figure 1–16. You DO NOT need to power off your host computer.

FIGURE 1–16. Connecting the USB Cable

3. Once properly connected to the host computer, the HE40T will power on and beep. The reader is shipped pre-configured.

PS2 Cable Connection

1. Power off the host computer. This process requires shutting down your computer. If you disconnect your computer keyboard while it is running, your computer will lock up.
2. Attach the PS2 cable to the HE40T.
3. If you have a cabled keyboard, detach the keyboard cable from your computer and connect that same connector to the female connection on the HE40T PS2 cable, as shown in Figure 1–17.

FIGURE 1–17. Connecting the Keyboard Cable

4. Now, connect the male HE40T PS2 connector into the keyboard port on your computer, as shown in Figure 1–18.

FIGURE 1–18. Connecting the PS2 Connector to Your Computer

The HE40T is powered by the PS2 port and does not require a power supply. Once properly connected, the HE40T will power on. The reader is shipped pre-configured.

RS-232 Cable Connection

1. Attach the RS-232 cable to the HE40T.
2. Connect the RS-232 cable to your host computer.
3. The RS-232 interface has an optional power supply. If you have a power supply, plug the power supply adapter into the RS-232 cable and then plug the power adapter into a wall socket. HE40T will power on once connected.
4. If battery power (no power adapter) is being used, press one of the red buttons for one second to power on the reader. The reader is shipped pre-configured.

USB Cable Settings

- USB Keyboard Mode — Data is sent from the reader and interpreted by the host computer as if a US keyboard was being used to enter data.
- USB Downloader — Communication method used to upgrade firmware.

FIGURE 1–19. USB Codes

M134_02
USB Keyboard

M133_01
USB Downloader

M049_03
Reset to USB Factory Defaults

All other USB settings (including Virtual COM settings) may be found in the HE40T User Manual. For further instructions regarding upgrading firmware, please consult your Microscan representative.

PS2 Cable Settings

PS2 Mode — Data is sent from the Reader and interpreted by the host just as if a US keyboard was being used to enter data.

FIGURE 1–20. PS2 Codes

M126_01

PS2 Mode

M060_03

Reset to PS2 Factory Defaults

RS-232 Cable Settings

RS-232 One Way Mode — Data is sent from the Reader as serial data through the RS-232 port.

FIGURE 1–21. RS-232 Codes

M131_01

RS-232 One Way Mode

M418_02

Reset to RS-232 Factory Defaults

RS-232 Default Settings
Mode: RS-232 One Way Mode Max Range
Baud Rate: 57600
Stop Bits: 1
Data Bits: 8
Parity: None

Baud Rates

Scan the codes in Figure 1–22 to set the baud rate:

FIGURE 1–22. Baud Rate Codes

M094_01

4800

M095_01

9600

M096_01

19200

M097_01

38400

M098_01

57600 Default

M099_01

115200

Save Settings

Save changes made to the HE40T configuration by scanning the codes in Figure 1–23:

FIGURE 1–23. Save Settings

Save Settings

Targeting and Reading Techniques

The HE40T utilizes digital camera technology to take a picture of a symbol. Once an image is captured, the HE40T utilizes Microscan's industry leading decoder to extract data from the captured image.

The H2 Cabled Handle and BH1/BH2 Battery Handle each feature a trigger on the handle, as shown in Figure 1–24. The two triggers on the top of the unit also work when the handle is attached.

FIGURE 1–24. Handle with Trigger

Caution
Laser in the HE40T

LASER RADIATION - AVOID LONG TERM VIEWING OF DIRECT LASER RADIATION - LASER CLASS 2M

Wavelength 630 nm - Maximum radiant power: < 1mW

EN 60825-1:2003

Reading Symbols with the HE40T

1. The HE40T features omnidirectional decoding. Center the symbol in any orientation within the laser dot aiming pattern, as shown in Figure 1–25.

Note: The HE40T can read a symbol that is not centered; however, the HE40T performs best when a code is centered.

The HE40T features omnidirectional decoding. Aiming the targeting laser at the center of the symbol ensures the best performance for decoding. The HE40T can read a symbol that is not centered and, under certain circumstances if multiple symbols are within the field of view, the user must take care of which symbol is read. The decoder will start from the center, but if the center symbol is not decodable, it may decode another symbol, if multiple symbols are present within the field of view.

FIGURE 1–25. Centering Symbol Within the Laser Dot

2. The HE40T was developed to decode both very small 2-D symbols and larger 1-D symbols. The unit features two imagers to create an innovative dual decode zone. The HE40T features a high speed processor and decodes both zones simultaneously by default. The unit has one imager focused on a near-field for smaller codes (optimal focal point is 4 inches) and one imager focused on a far-field for larger codes (optimal focal point 9 inches). To read smaller symbols, move the HE40T closer to the symbol. To read larger symbols, move the unit farther away from the symbol. The entire HE40T decode zone varies between two (2”) and twenty (20+”) or more inches.

3. Hold the HE40T Reader still - DO NOT SWIPE OR MOVE THE READER. Press the trigger until the HE40T beeps, indicating the bar code has been successfully decoded.

Programming Codes

A programming code symbol encodes special messages used to program the HE40T.

Symbology Settings

Symbology Defaults

Data Matrix	ON	Interleaved 2 of 5	OFF
Codabar	OFF	UPC	OFF
Code 128	OFF	QR/Micro QR	OFF
Code 93	OFF	PDF417	OFF
Code 39	OFF		

FIGURE 1–26. Symbology Programming Codes

M275_01
Codabar On

M274_01
Codabar Off

M283_01
Code 128 On

M282_01
Code 128 Off

M281_02
Code 93 On

M280_01
Code 93 Off

M235_01
Code 39 On

M234_01
Code 39 Off

M244_01
I 2 of 5 On

M243_01
I 2 of 5 Off

M295_01
UPC On

M294_01
UPC Off

M297_01
UPC Extension On

M296_01
UPC Extension Off

M261_01
QR/Micro QR On

M260_01
QR/Micro QR Off

M293_01
PDF417 On

M292_01
PDF417 Off

M188_02
Save Settings

FIGURE 1–27. Symbology Programming Codes (Continued)

All 1D On

All 1D Off

Save Settings

DoD UID Settings

The HE40T unit complies with MIL-STD-130, ISO 15434, and ISO 15418 to construct a Unique Items Identifier (UII), Current Port Number (CPN), and Lot/Batch Number (LBN).

The following UID data output options are applicable to Data Matrix only and have no effect on other symbologies:

- UII/CPN DM On — The HE40T is configured to construct Unique Item Identifier (UII), Current Part Number (CPN), and Lot/Batch Number (LBN). If there is a valid UII/CPN/LBN, a UII/CPN/LBN string is outputted. For decoded Data Matrix with invalid UII/CPN/LBN, HE40T stops image acquisition without an output string.

- UII/CPN DM with Data Fields — The HE40T is configured to construct UII/CPN/LBN with all the data fields.UII DM with Data Field — The HE40T is configured to construct UII and output additional data fields.

The following options apply to all symbologies:

- UII/CPN On for All Symbologies — The HE40T is configured to construct UII/CPN/LBN for all symbologies. For decoded symbologies without valid UII/CPN/LBN, the HE40T stops image acquisition without an output string.

- UII/CPN Off — The HE40T is back to normal decoder behavior without constructing UII/CPN/LBN.

FIGURE 1–28. UII Codes

M394_01
UII/CPM DM On

M396_01
UII DM with Data Field

UII On for all Symbologies

M393_01
UII/CPM Off

M188_02
Save Settings

Batch Mode

The HE40T unit features a batch mode for applications requiring a portable reader. Batch mode allows a user to store scanned data to the reader's non-volatile memory. You may transfer the data to a host computer when needed. To utilize batch functionality, you will need to use the BH1/BH2 battery handle.

The HE40T dedicated batch memory is a minimum of 1MB. To determine the number of reads that may be stored, divide the average bytes of a scan into the total minimum memory.

Auto Transfer Buffer Memory

By default, when reconnected, the HE40T will automatically transfer any data in memory once a connection to a host is established. If your application is not ready, the reader will send the data anyway and the data could be lost. If you do not wish for the reader to immediately send data upon connection, please scan the Disable Auto Transfer Buffer Memory.

FIGURE 1–29. Auto Transfer Buffer Memory Codes

M075_01
Send & Buffer Mode (Default)

M072_01
Log Only Mode

M188_02
Save Settings

M076_01
Send & Log Mode

M077_02
Transfer All Data Memory

M078_02
Transfer Only Unsent Data

M071_01
Delete Scanned Data From Memory

M070_01
Enable Auto Transfer Buffer Memory (Default)

M069_01
Disable Auto Transfer Buffer Memory

Trigger Programming

Left Trigger

FIGURE 1–30. Left Trigger Programming Codes

M178_01

Read With Both Imagers (Default)

M176_01

Read With Far-Field Imager

M177_01

Read With Near-Field Imager

Right Trigger

FIGURE 1–31. Right Trigger Programming Codes

M185_01

Read With Both Imagers (Default)

M183_01

Read With Far-Field Imager

M184_01

Read With Near-Field Imager

Handle Trigger

FIGURE 1–32. Handle Trigger Programming Codes

Read With Both Imagers (Default)

Read With Far-Field Imager

Read With Near-Field Imager

Turbo Dot Peen Mode

The HE40T with the default settings offers the best overall performance for Data Matrix DPM reading. For reading dot peen marks with cell size larger than 15 mils or 0.015 inches, it is often possible to improve the reading performance by enabling the Turbo Dot Peen mode. It is also recommended that you use Read With Near Field Only mode with the Turbo Dot Peen On mode to achieve the best reading response.

Note: Turbo Dot Peen mode should not be used for reading small marks (dot peen or others) as it may increase the processing time and reduce the robustness of reading small marks.

FIGURE 1–33. Turbo Dot Peen Mode Codes

On

Off

Save Settings

Prefix Settings

If you scan the following codes, you may lose your current settings. Save settings on your reader before scanning the prefix codes. If you scan more than one prefix, you will receive each scanned prefix in your scanned data (i.e., if you scan comma prefix twice, you will get two comma prefixes). Scan the codes in Figure 1–34 and Figure 1–35 to set the appropriate prefix:

FIGURE 1–34. Prefix Settings

Prefix - Comma

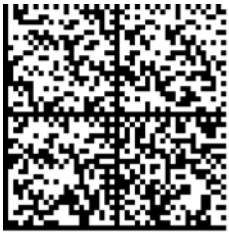
Prefix - Space

Prefix - Carriage Return Line Feed (RS-232)

Prefix - Tab (RS-232)

FIGURE 1–35. Prefix Settings (Continued)

Prefix - Tab
(USB/PS2)



Prefix - Erase
This code will erase
all prefix data

Save Settings

Suffix Settings

If you scan the codes in Figure 1–36 and Figure 1–37, you may lose your current settings. Save settings on your reader before scanning the Suffix codes. If you scan more than one suffix, you will receive each scanned suffix in your scanned data (i.e., if you scan comma suffix twice, you will get two comma suffixes). Scan the codes in Figure 1–36 and Figure 1–37 to set the appropriate suffix:

FIGURE 1–36. Suffix Settings

Suffix - Space

Suffix - Comma

Suffix - Enter
(USB/PS2)

Suffix - Carriage Return
Line Feed (RS-232)

FIGURE 1–37. Suffix Settings (Continued)

M168_04

Suffix - Carriage Return
(RS-232)

M169_04

Suffix - Line Feed
(RS-232)

M219_04

Suffix - Tab
(RS-232)

M167_04

Suffix - Tab
(USB/PS2)

M405_02

Suffix - Erase/None
This code will eras
all suffix data

M188_02

Save Settings

Volume and Vibration Settings

Scan the codes in Figure 1–38 to set volume and vibrations settings:

FIGURE 1–38. Volume & Vibration Settings Codes

M107_01
Vibrate On
Beep On

M109_01
Vibrate On
Beep Off

M108_01
Vibrate Off
Beep On

M153_01
Reader ID & Firmware Version

M188_02
Save Settings

Minimum Requirements

Operating Systems: Windows© 2000, XP

Interfaces: USB, RS-232, and PS2

Bluetooth™: HE40T only supports Bluetooth serial profile